

# Upper Petaluma River Watershed Flood Control Project



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[www.sonomacountywater.org](http://www.sonomacountywater.org)  
[www.scwa.ca.gov/stormwater-groundwater/](http://www.scwa.ca.gov/stormwater-groundwater/)

# Meeting Agenda

- A. Greetings and Introduction
- B. Project Overview
- C. Concepts
- D. Concept Prioritization
- E. Next Steps



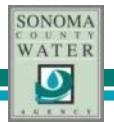
# Meeting Purpose

- Discuss flood and groundwater project concepts
- Discuss screening and prioritization process
- Solicit input on concepts, concept locations, and concept prioritization



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# Project Overview

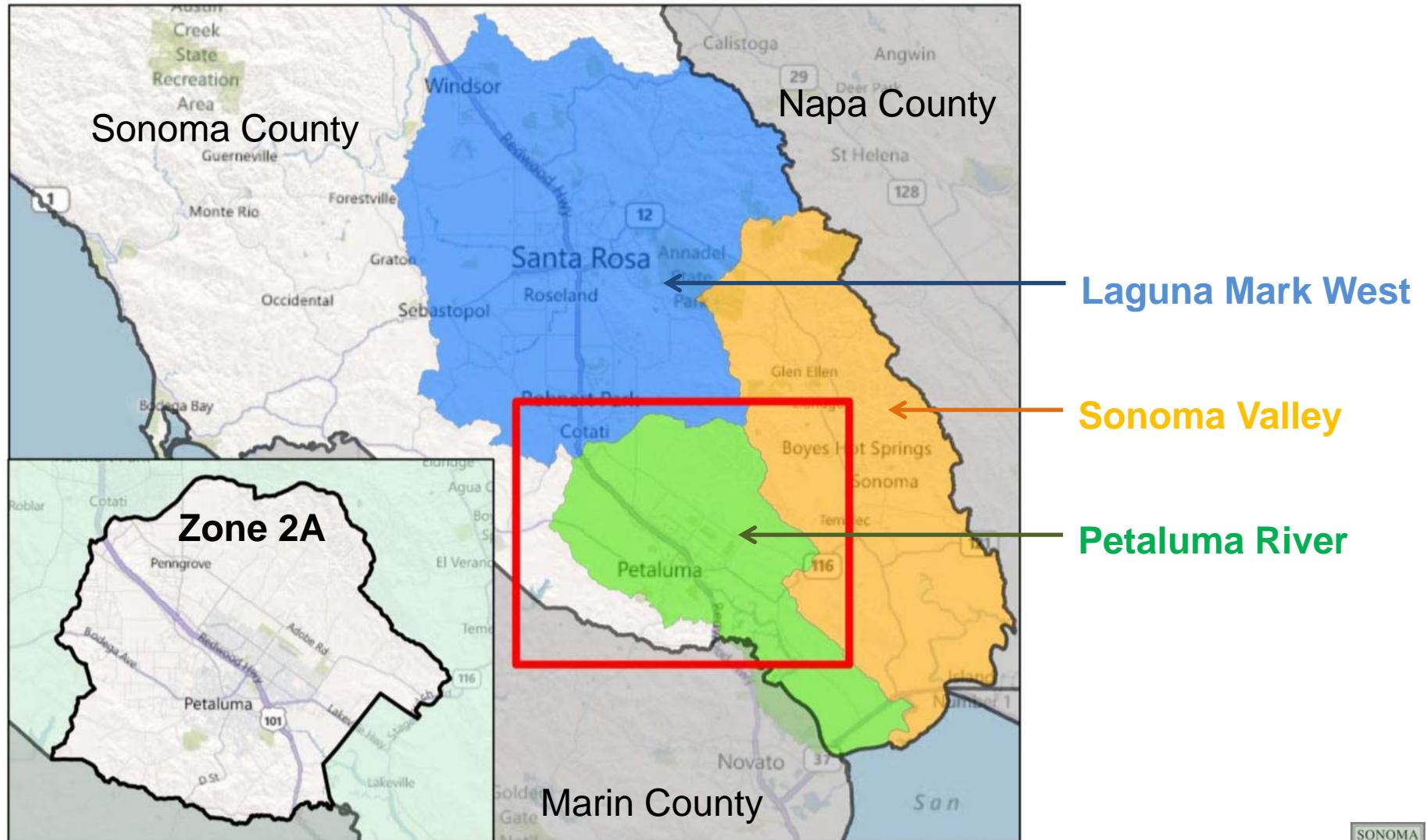


# Project Basis

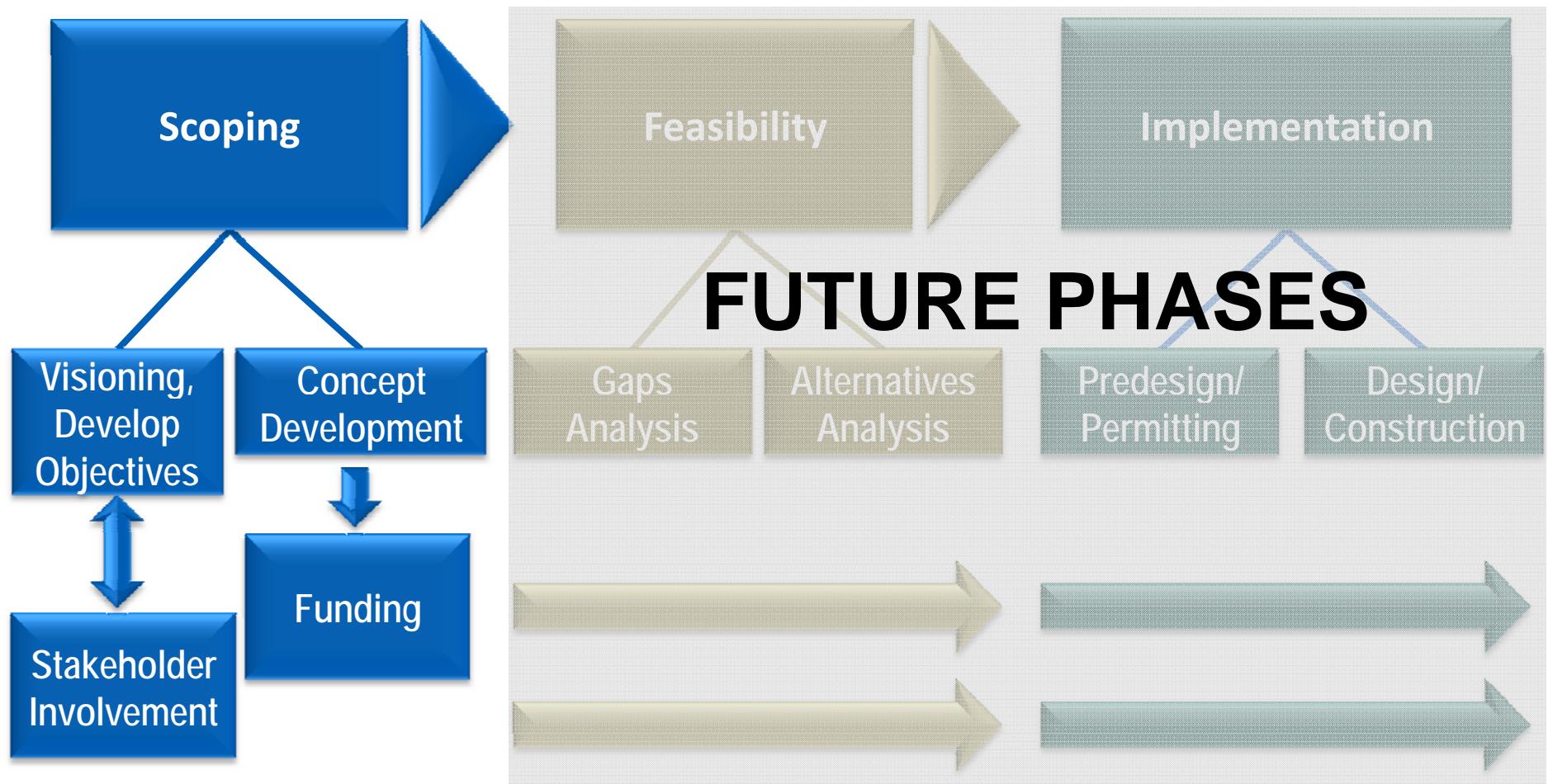
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- Two core objectives
    - Provide up to 100-year flood protection
    - Increase groundwater recharge potential
  - Seven supporting objectives
    - Water quality
    - Water supply
    - System Sustainability
    - Ecosystem
    - Agricultural land
    - Undeveloped land
    - Community benefits
  - Projects are multi-benefit
    - Improve likelihood of outside funding
    - Provide additional implementation value
  - Projects reflect input of partners, stakeholder groups, regulators and study area residents
    - Multiple workshops
    - Project tour
  - Consistent with Water Agency mission and initiatives



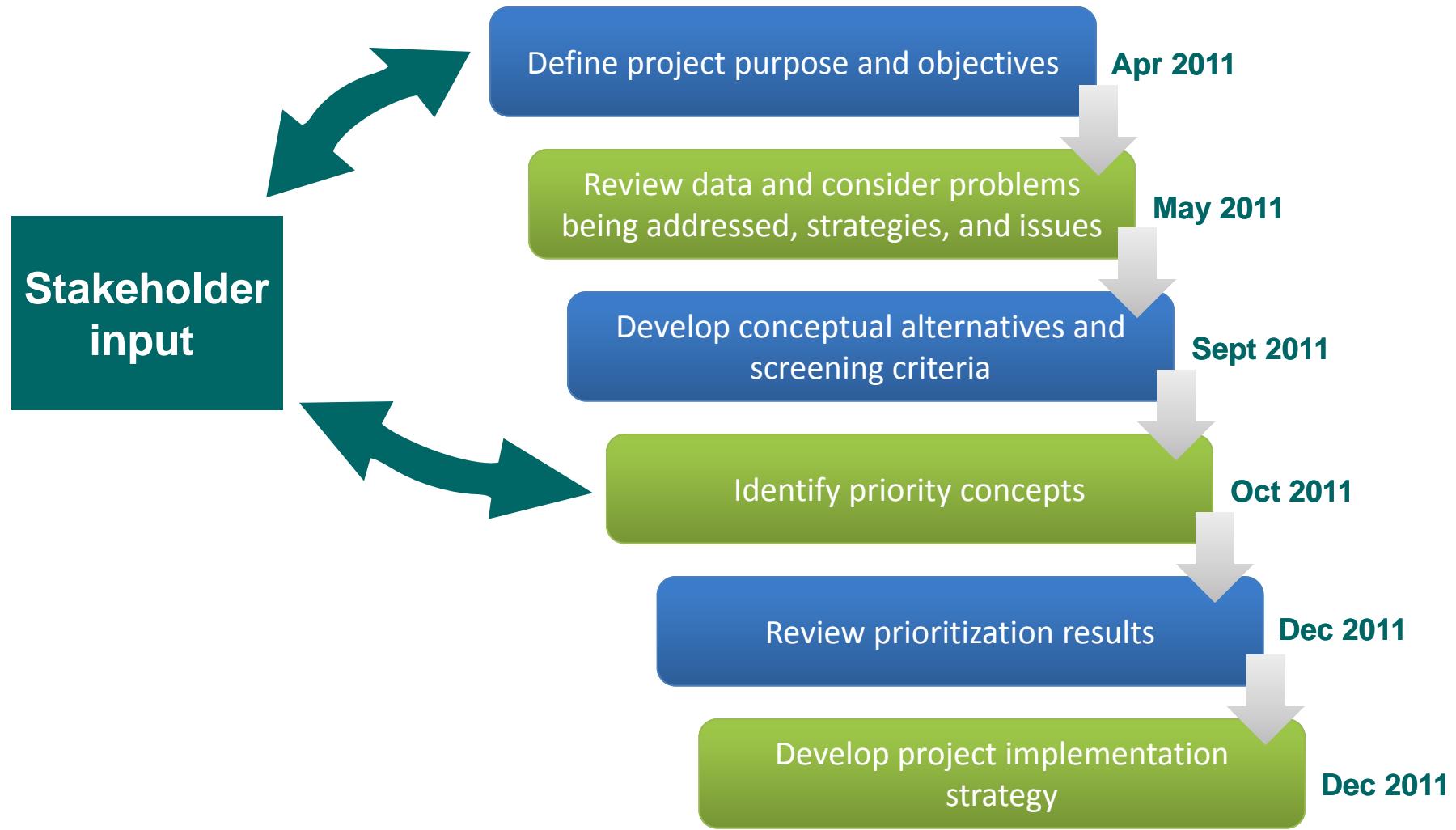
# Similar Project in Three Watersheds



# Planned Process - Phases of Work



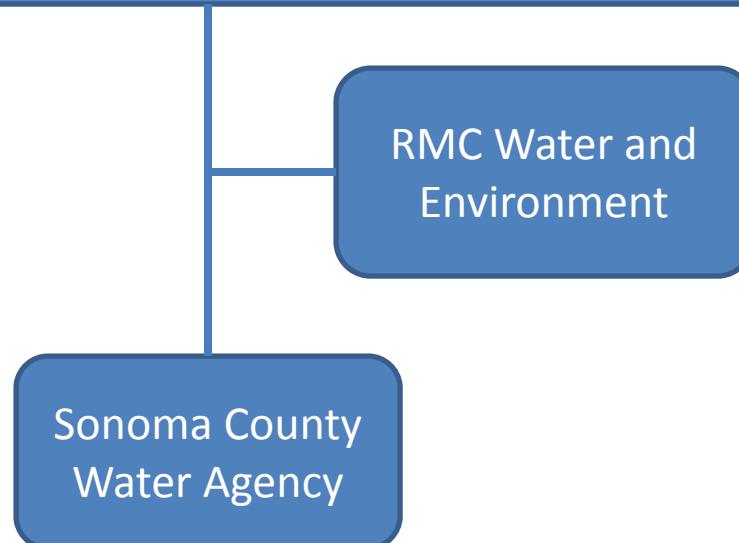
# Scoping Study Schedule



# Project Participants

## SOLICITING INPUT FROM...

Study Area Residents	North Bay Agricultural Alliance	Sonoma Mountain Preservation Group
City of Petaluma	United Anglers	Western United Dairymen
Sonoma County	OWL Foundation	River Clean-up Committee
Zone 2A	Southern Sonoma County RCD	KOA Campground
Friends of the Petaluma River	The Bay Institute	P.L.A.N.
Petaluma River Council	Petaluma Wetlands Alliance	Regulatory Agencies
North Bay Watershed Association	LandPaths	
	Sonoma Land Trust	



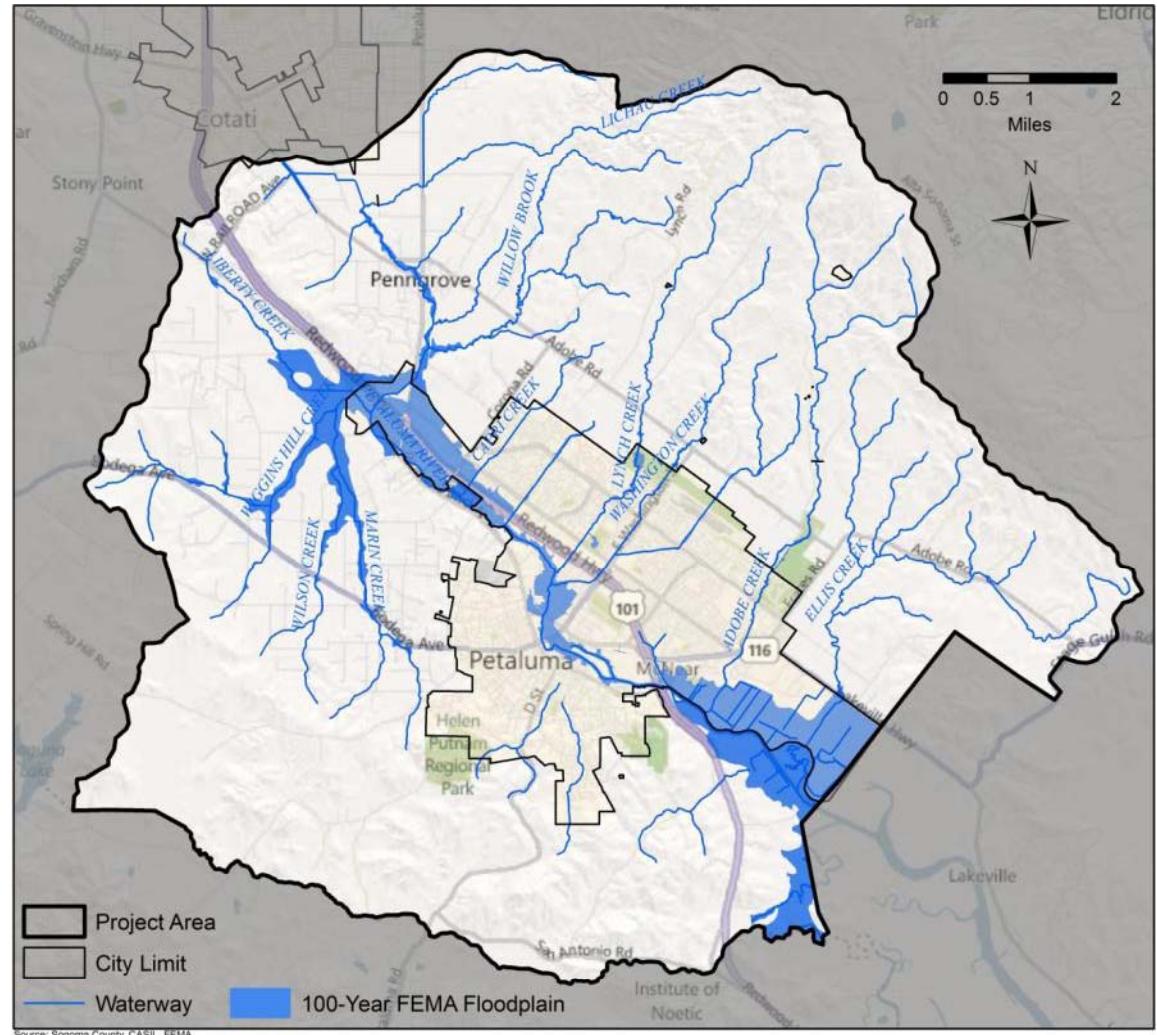
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# Project Concepts



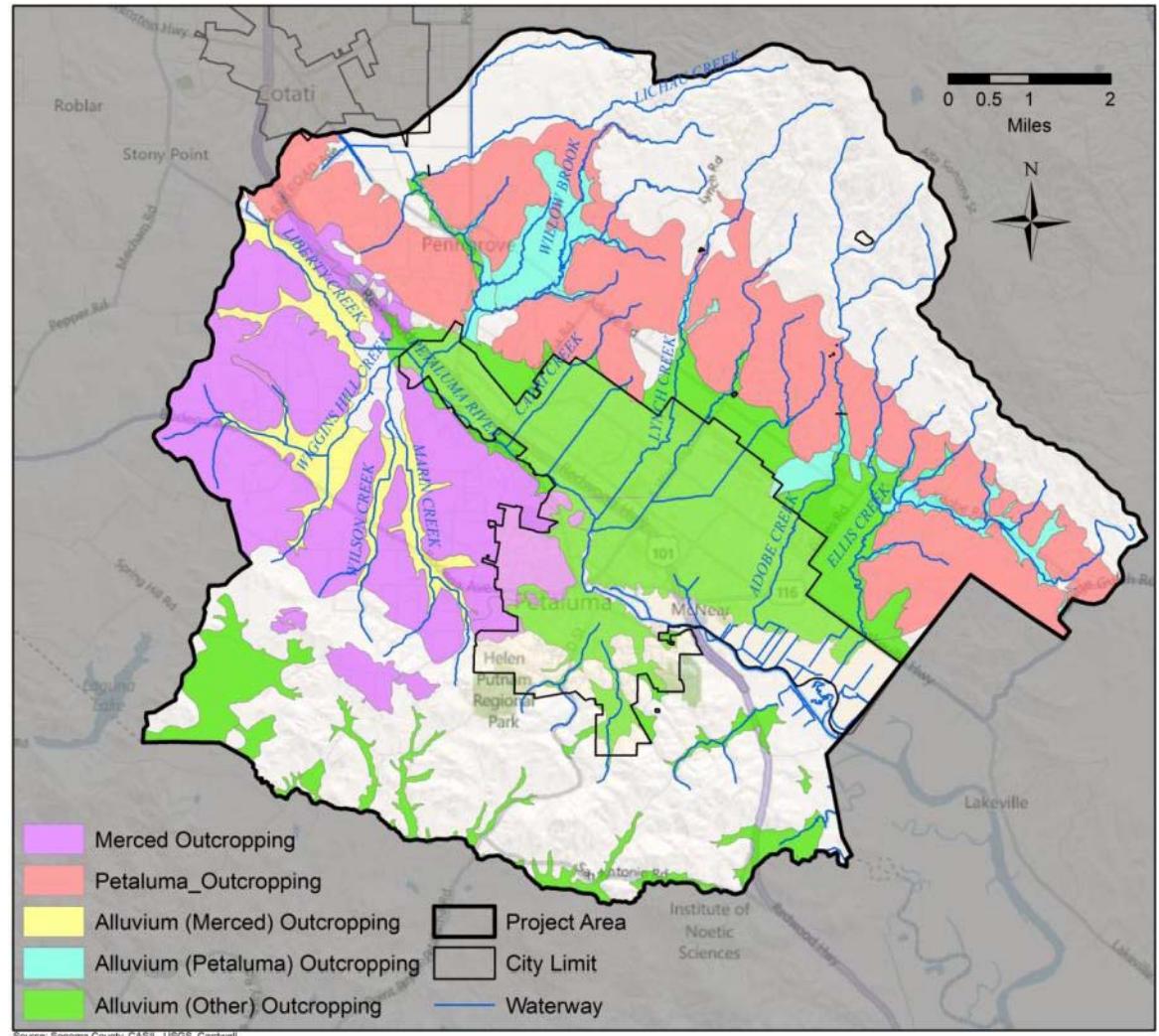
# Flood Hazard Reduction Criteria

- Need to:
  - Reduce peak flows  
OR
  - Increase hydraulic capacity
- Impacts to downstream projects to be determined in feasibility phase
- Waterways upstream of and including Lynch Creek confluence
- Areas within 100-year floodplain are principal recipients of benefits



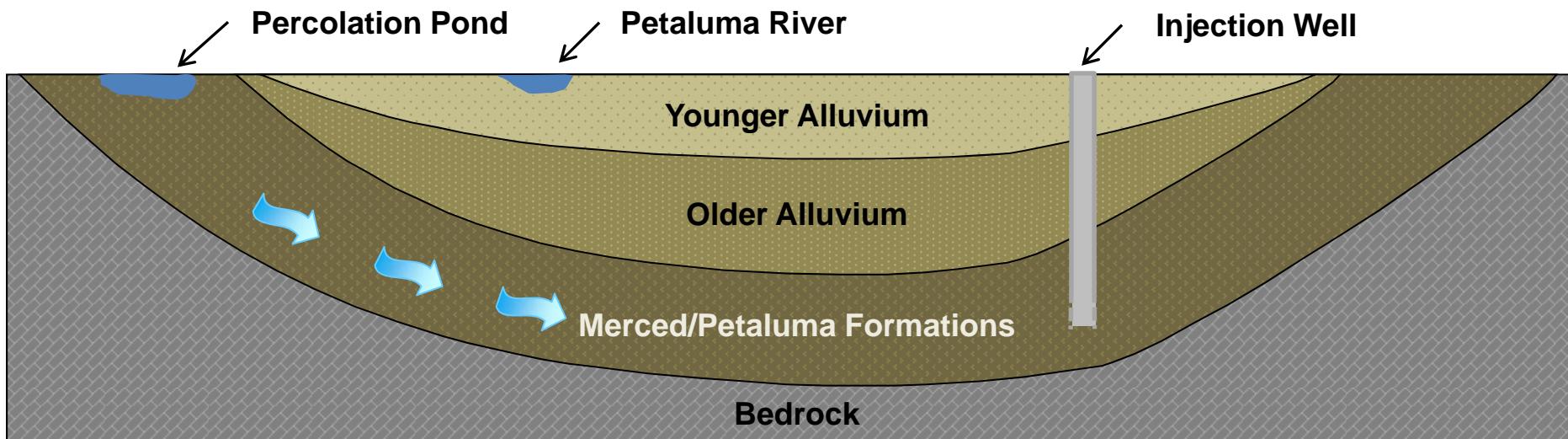
# Recharge Criteria

- Merced Formation and Petaluma Formation are most effective for water supply recharge
- Alluvium above Merced and Petaluma also considered viable for water supply recharge
- Other alluvium could provide benefits other than water supply recharge



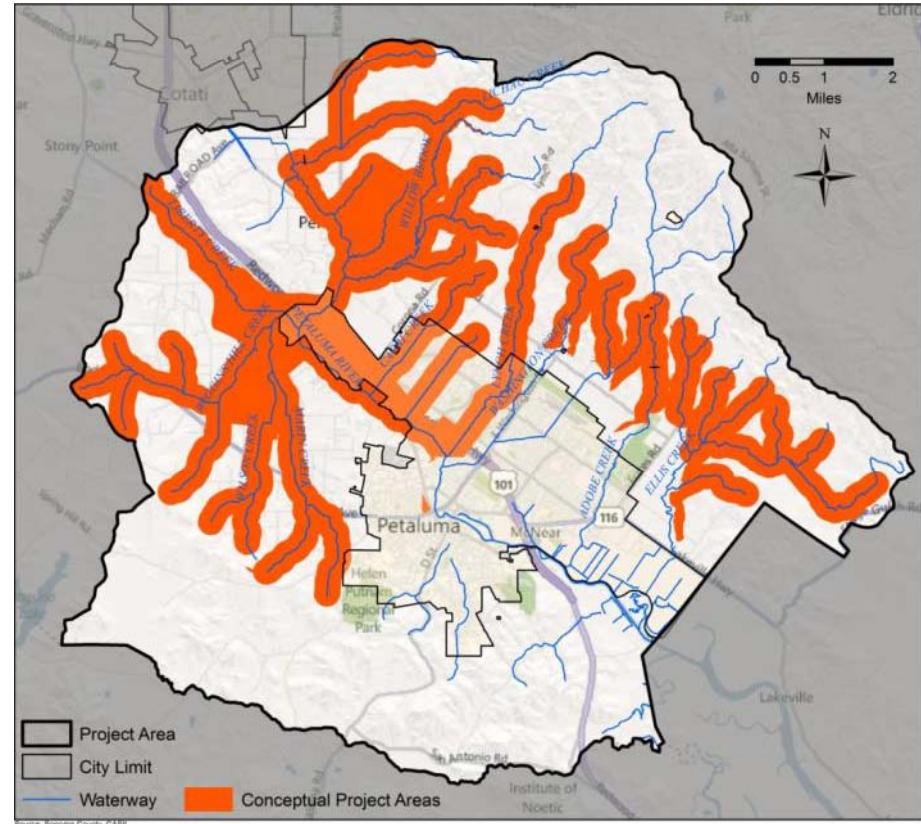
# Geologic Layers

- Layers bent when mountains created
- Sands and gravels allow water to move
  - Merced Formation
  - Petaluma Formation
  - Older Alluvium
- Silts and clays do not allow water to move as well
  - Younger alluvium
- Infiltration recharge methods need to be located where water can percolate
- Wells can puncture impermeable layers



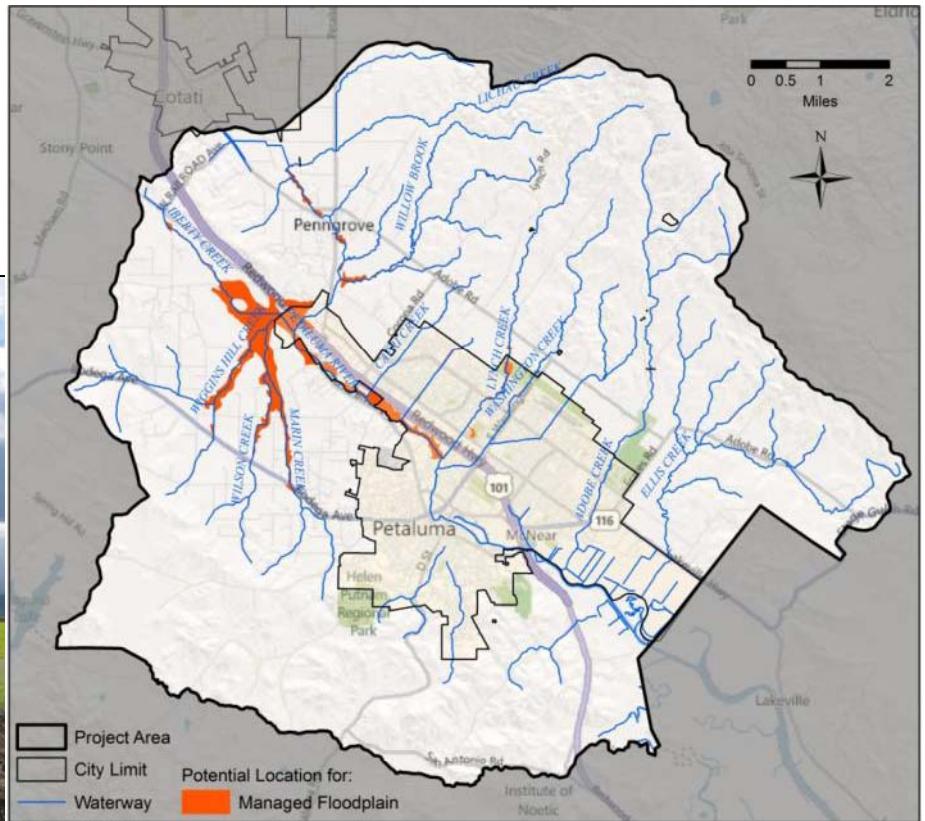
# Conceptual Locations

- General concept location criteria
  - Undeveloped land
  - Relatively flat
  - Relatively close to waterway or floodplain
  - Relative location to geologic formation
- Individual concepts have unique considerations
- Preferred project locations to be confirmed during Feasibility Phase based on additional criteria



# Concept 1: Managed Floodplain

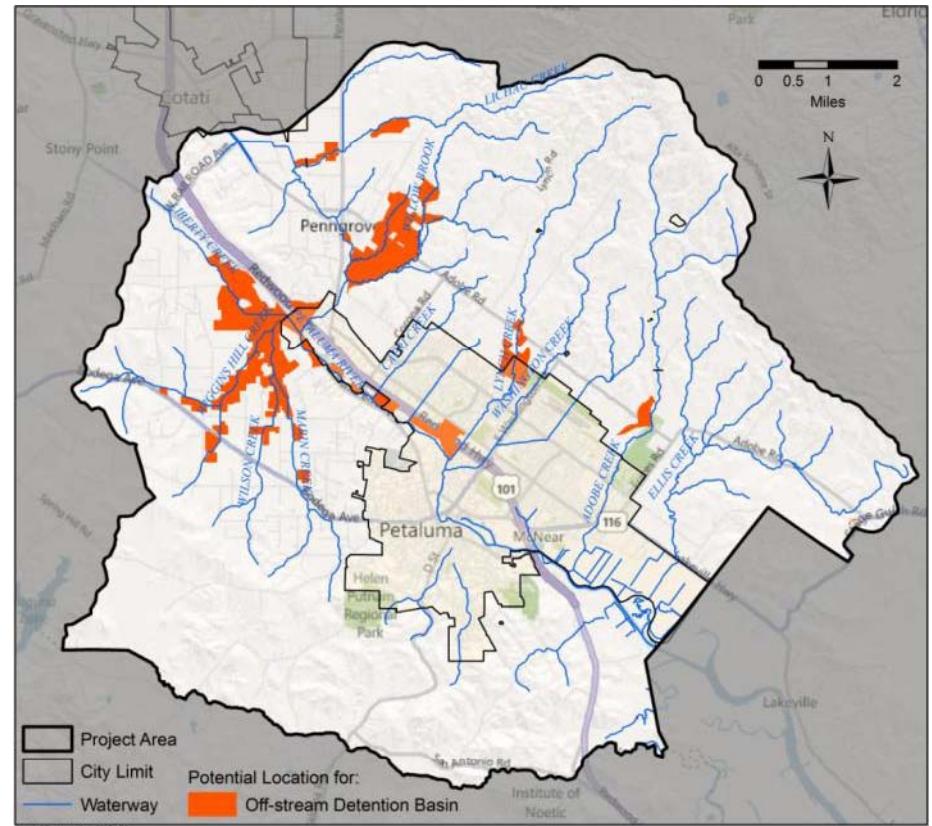
**Goal:** Maintain flood protection and recharge benefits provided by existing floodplain



Continued effectiveness of downstream flood projects depends on avoiding upstream attenuation degradation

# Concept 2: Off-stream Detention

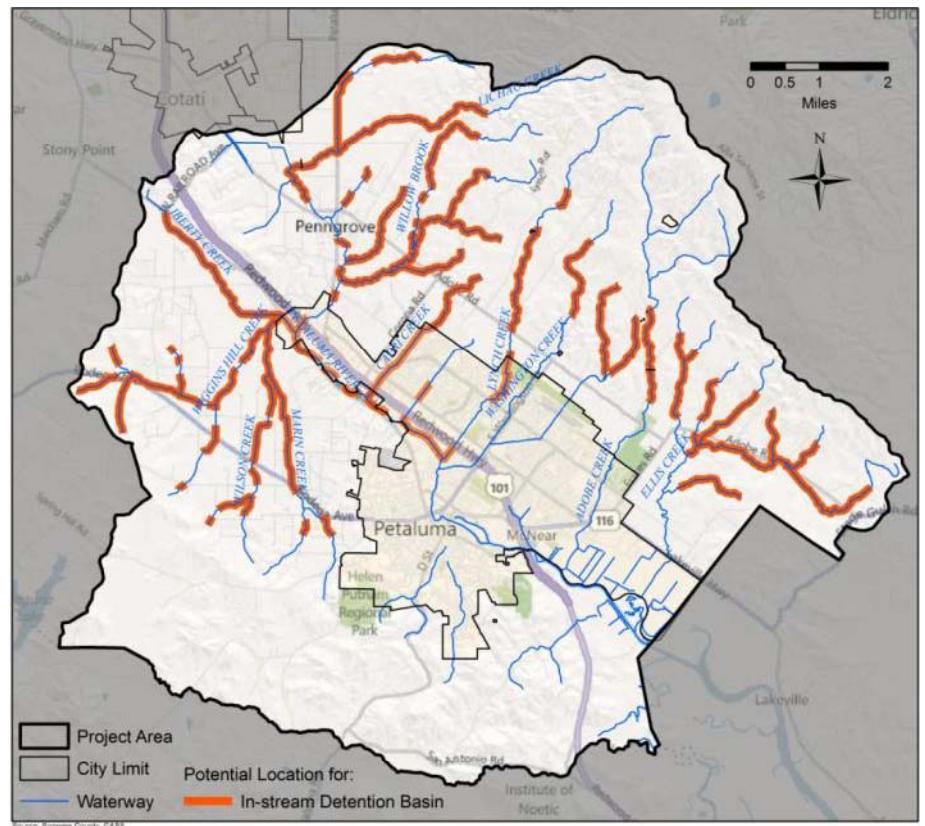
**Goal:** Divert high flows to temporary holding ponds for flood reduction and recharge



Concept keeps low flows in the channel to maintain environmental conditions and sediment transport characteristics

# Concept 3: In-stream Detention

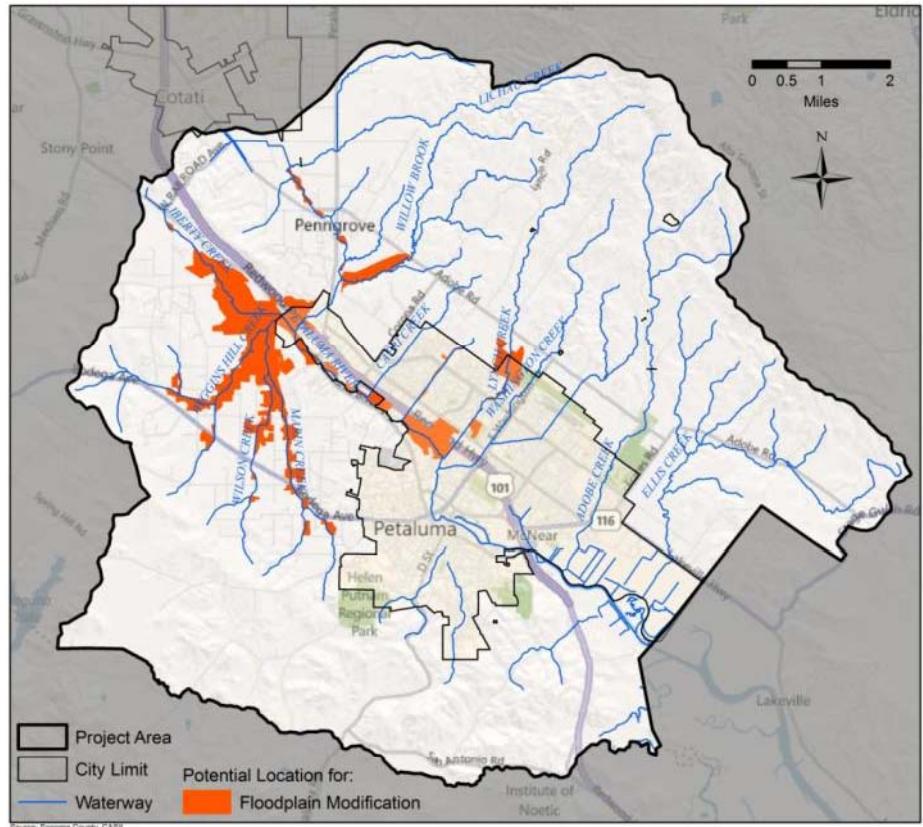
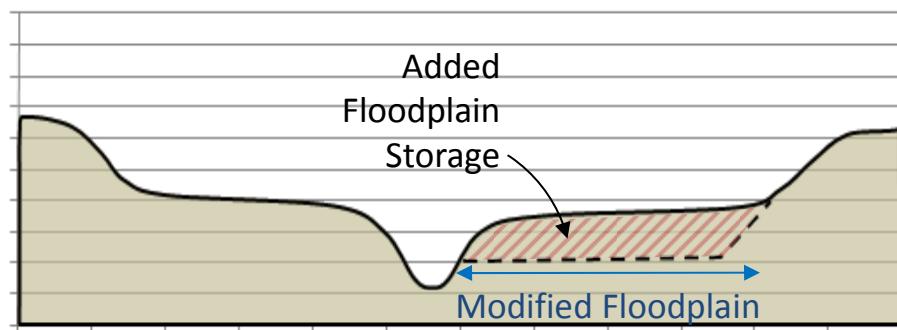
**Goal:** Detain high flows for flood reduction and recharge using the existing stream as a basis



Possible to integrate multiple basin uses with waterway.

# Concept 4: Floodplain Modification

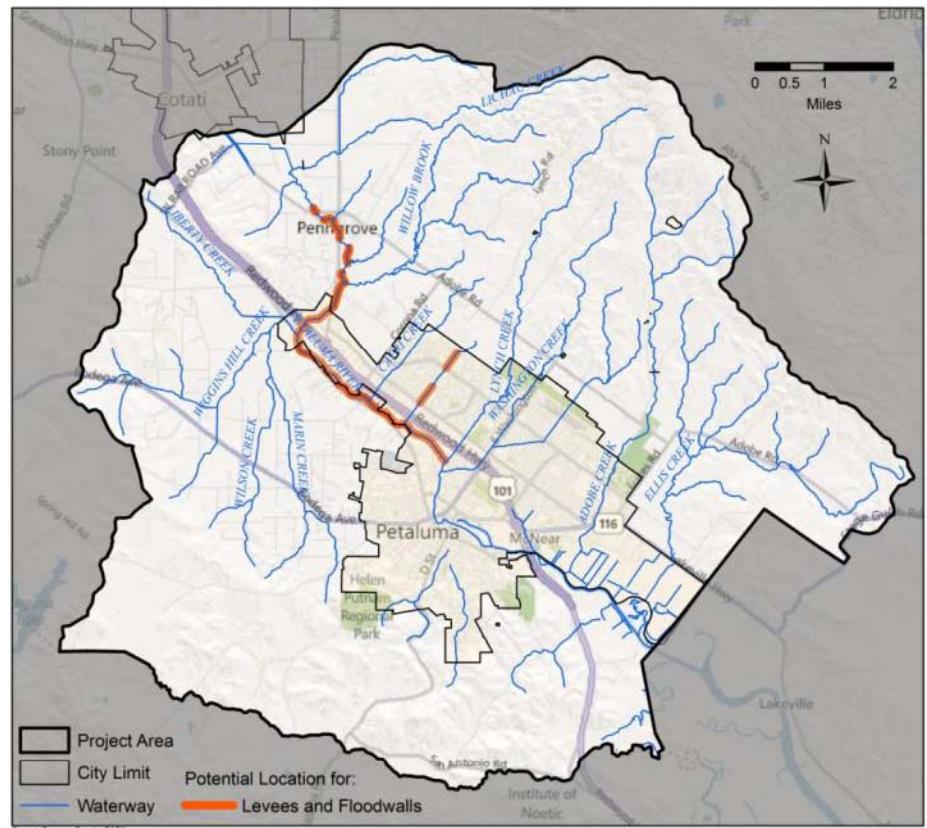
**Goal:** Create additional storage volume and potential recharge area using existing floodplains as a basis



Same concept as Petaluma's Denman Terracing Project

# Concept 5: Levee/Floodwall

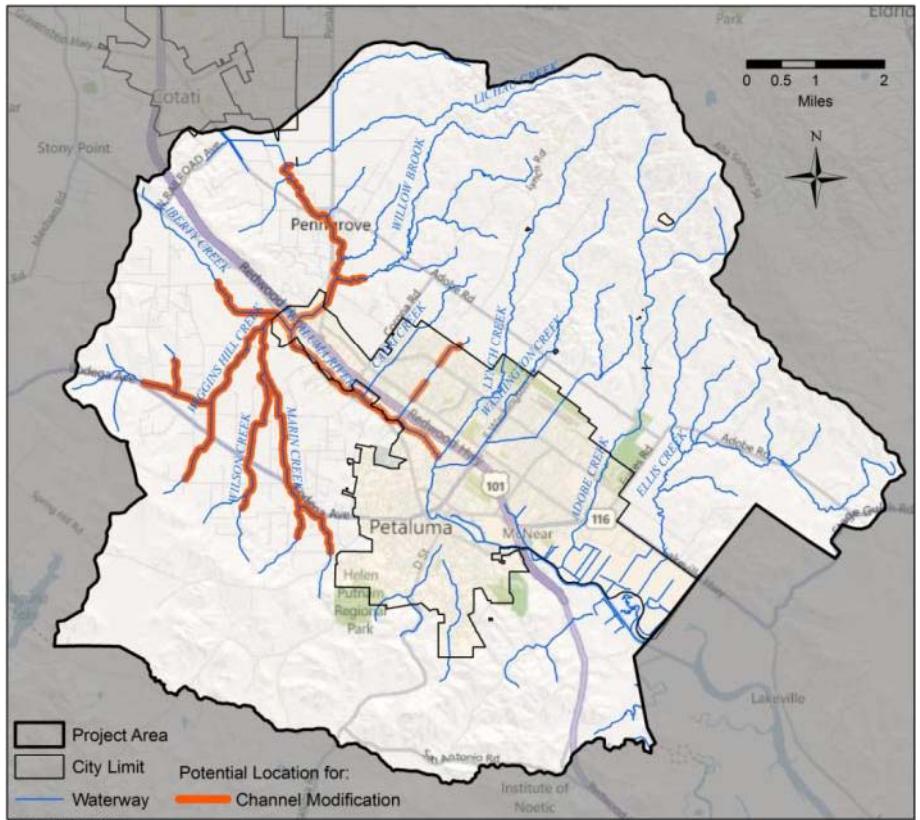
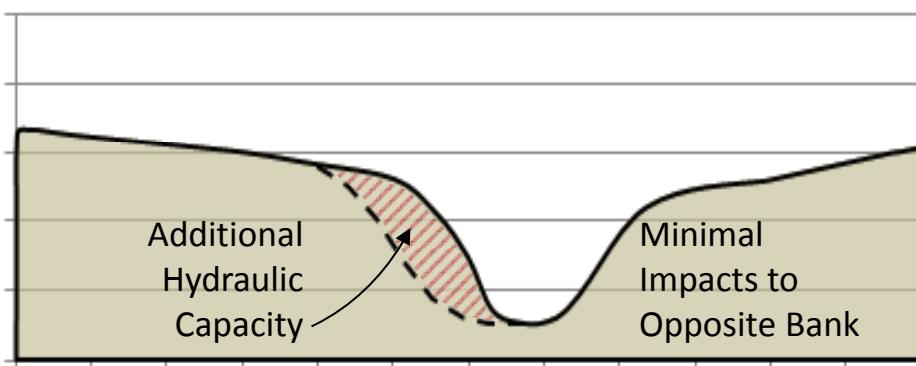
**Goal:** Constrain flows to a narrower pathway than the existing floodplain



Project impact area directly correlated with benefit area

# Concept 6: Channel Modification

**Goal:** Reshape channel section for increased capacity and recharge area



Project impact area directly correlated with benefit area

# Concept 7: Bypass Channel

**Goal:** Divert high flows to parallel channel for flood reduction and potential recharge

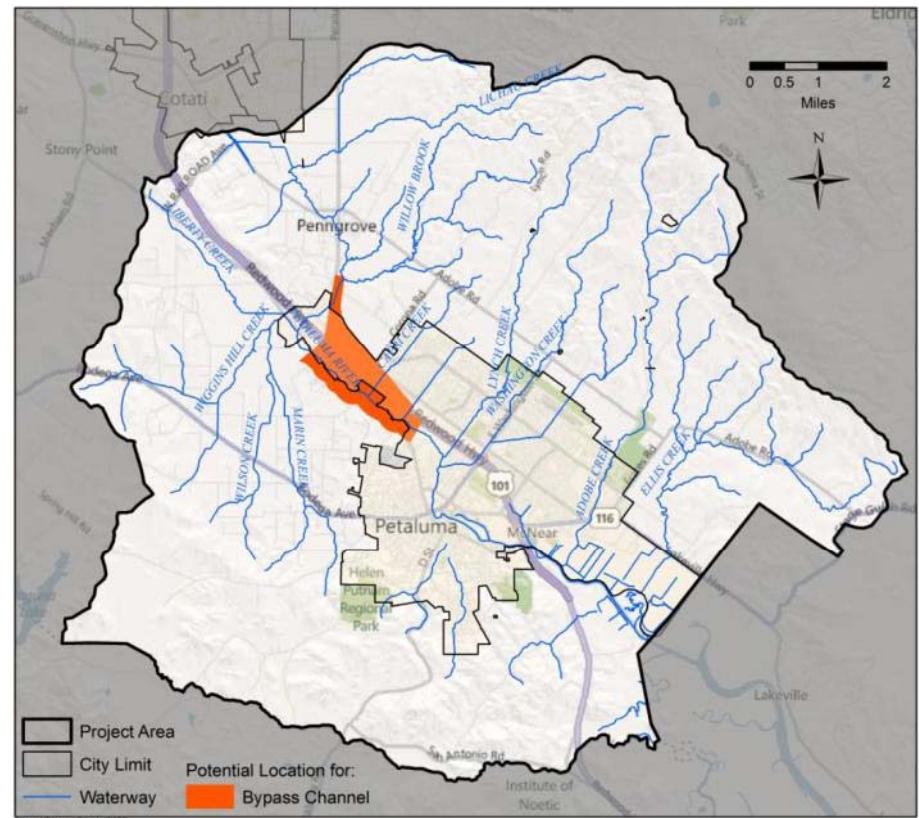
Existing capacity leads to flooding



At-grade bypass can reduce flooding



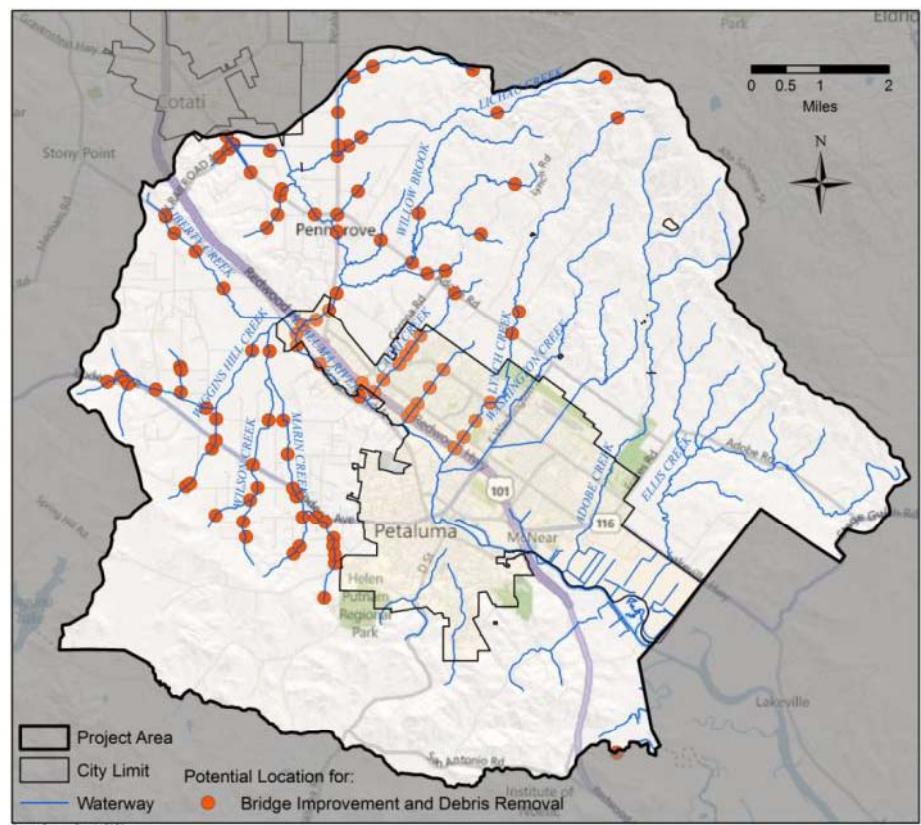
Buried bypass can reduce flooding



Concept keeps low flows in the channel to maintain environmental conditions and sediment transport characteristics

# Concept 8: Bridge Improvement and Debris Removal

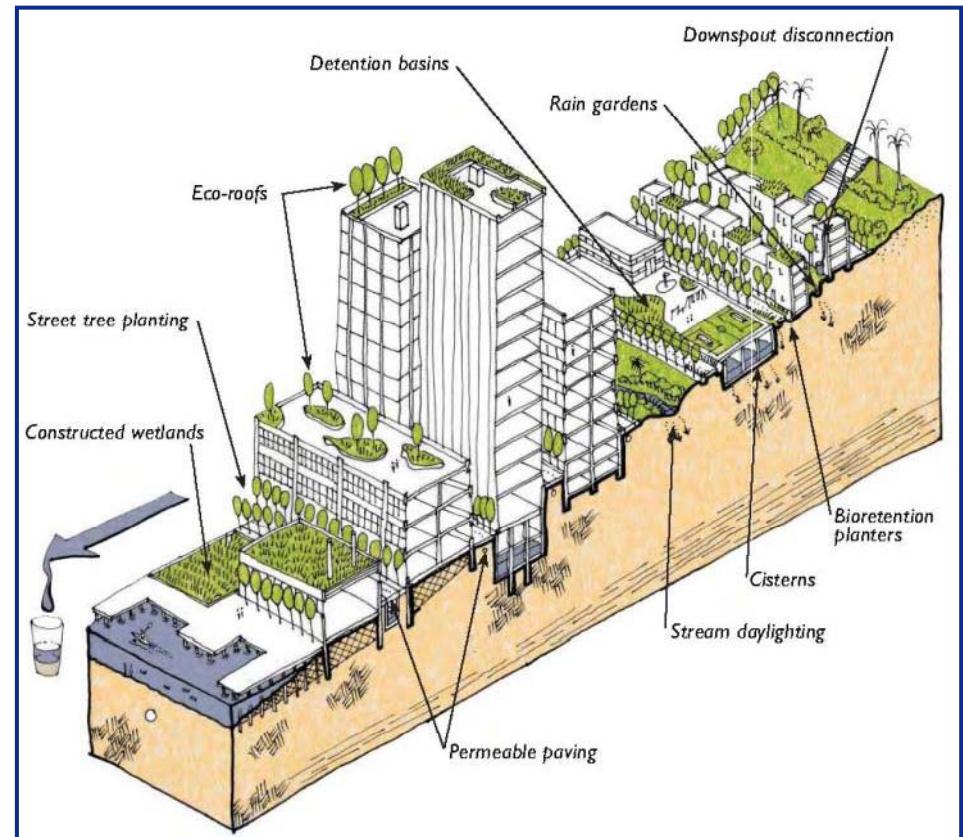
**Goal:** Improvement of bridge areas to reduce potential for flooding due to debris build-up



Concept could lead to less emergency operations and maintenance

# Concept 9: Low Impact Development

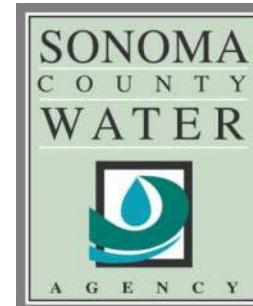
**Goal:** Reduce development-related runoff and provide opportunity for recharge



Many LID practices improve runoff water quality

# Concept 10: Policy Review and Development

**Goal:** Identify policies that impact flood hazards and groundwater recharge and update as necessary

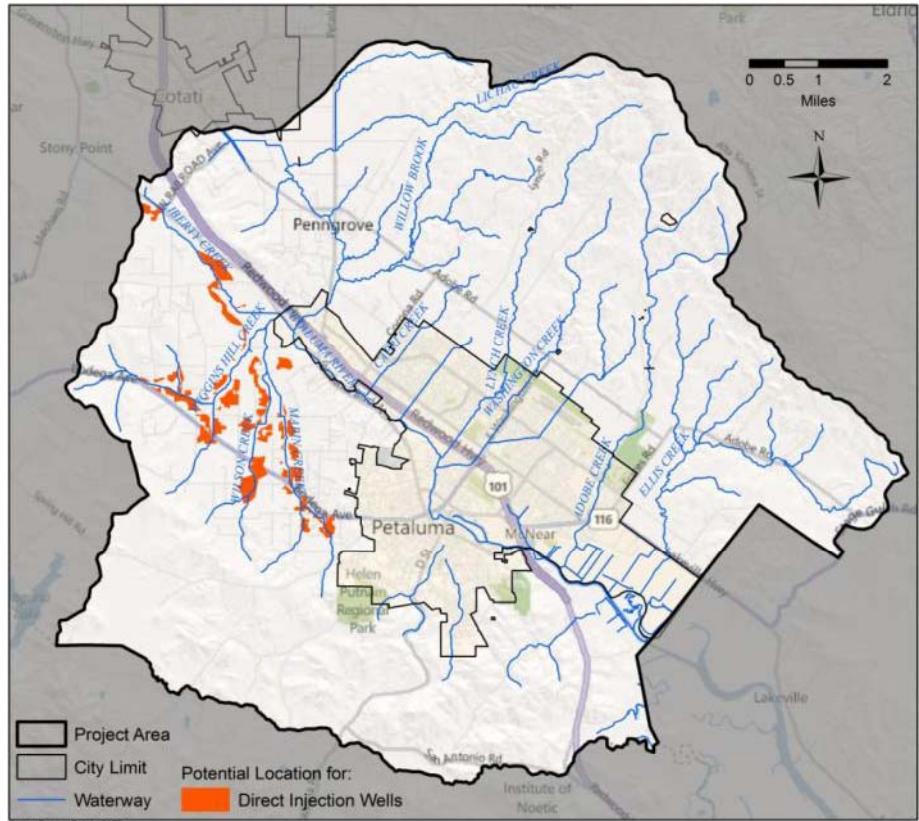
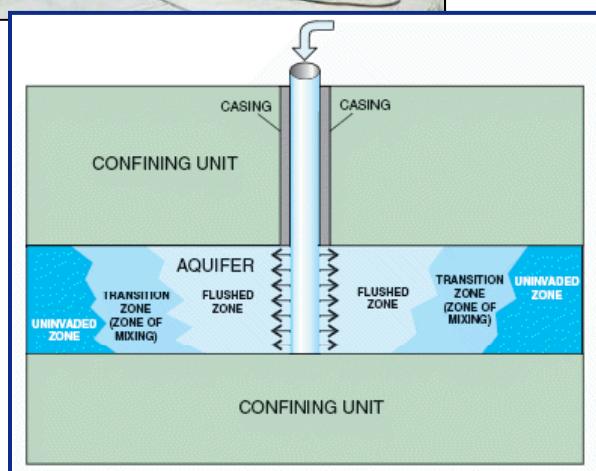


Collaborative concept could be applied at local or county-wide scales.



# Concept 11: Direct Injection

**Goal:** Pump water directly into aquifers



Better control of water quality entering aquifers than percolation methods

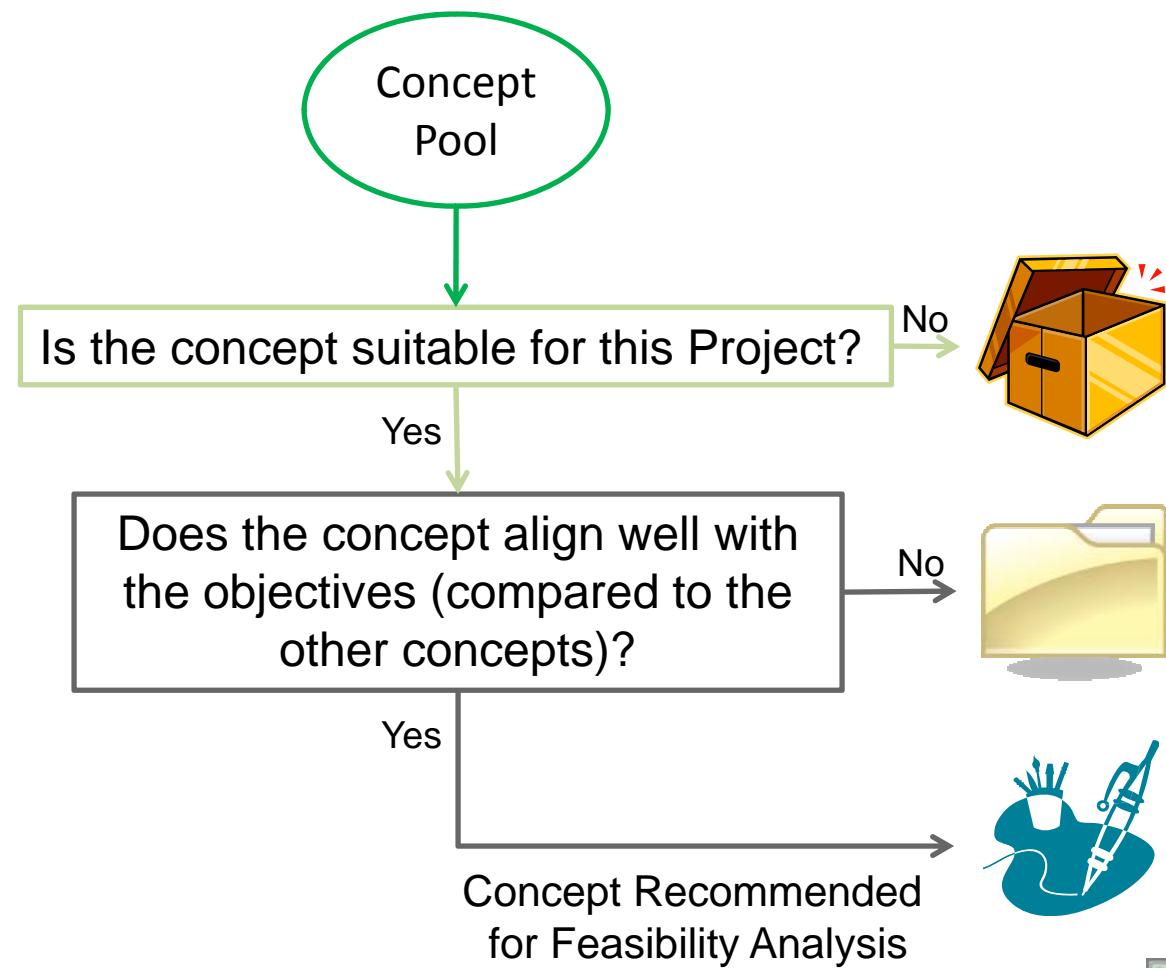
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# Concept Prioritization



# Prioritization Process

- 2 Stages
  - Screening
  - Prioritization



# Screening Process

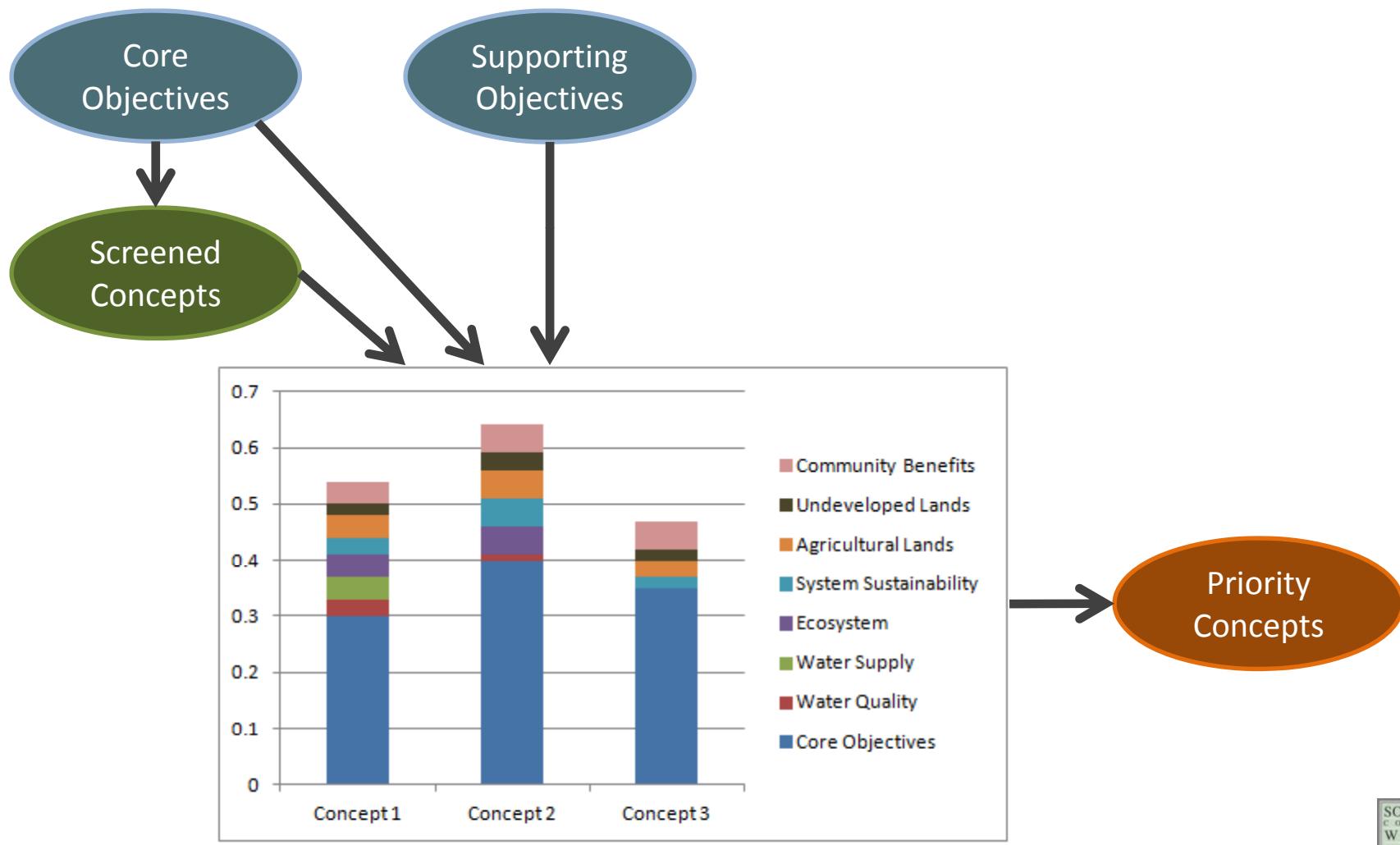
Does the Concept Provide Flood Hazard Reduction and Groundwater Recharge (Key Project Purpose)?

- Yes = Advanced to the prioritization process
- No = Not advanced to the prioritization process
  - Water Agency could consider participation through other venues

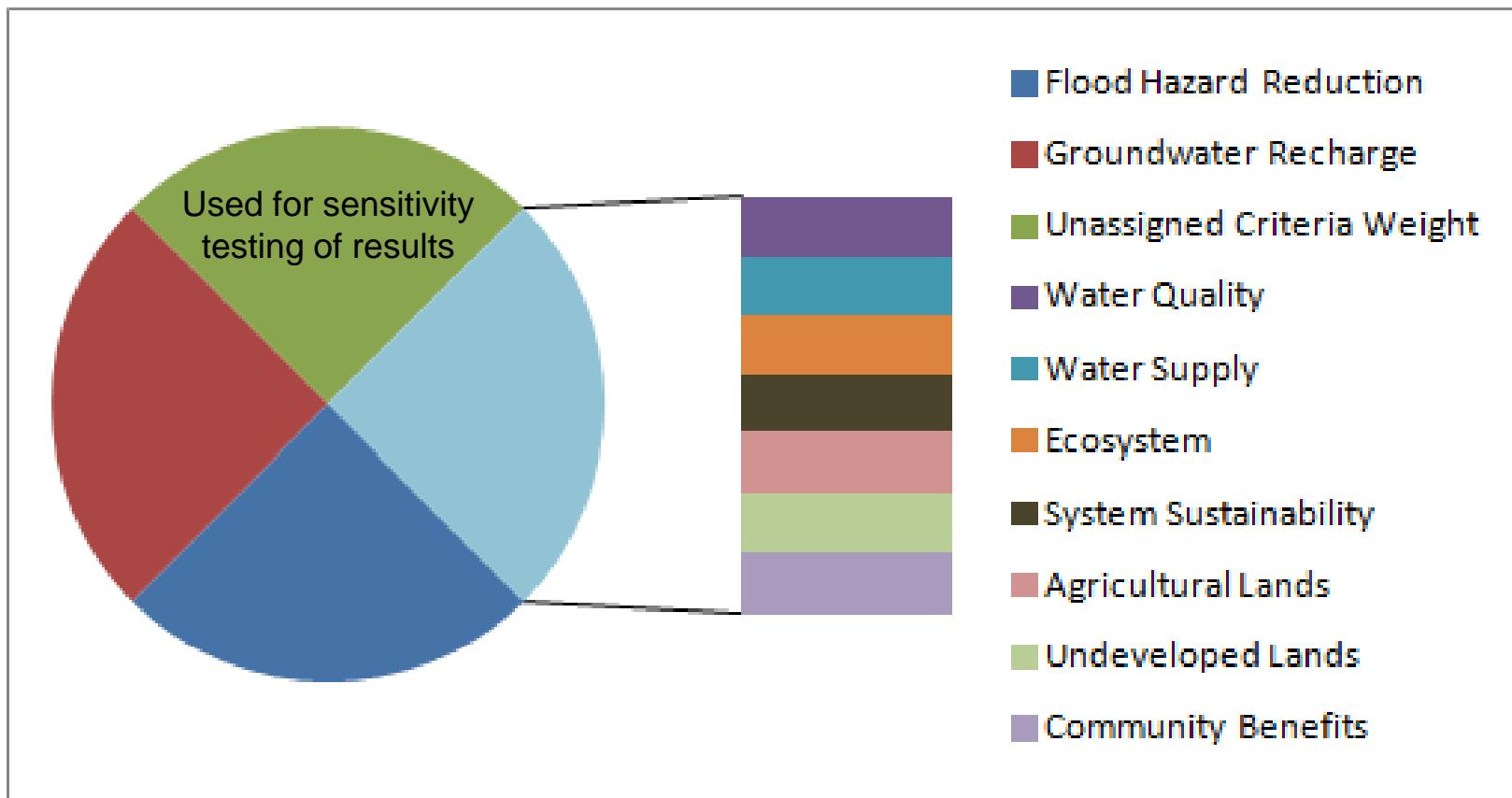
Concept	Response
1. Managed Floodplain	Yes
2. Off-stream Detention	Yes
3. In-stream Detention	Yes
4. Floodplain Modification	Yes
5. Levee/Floodwall	No
6. Channel Modification	Yes
7. Bypass Channel	Yes
8. <del>Bridge Improvement &amp; Debris Removal</del>	No
9. Low Impact Development	Yes
10. Policy Review and Development	Yes
11. <del>Direct Injection</del>	No



# Objectives Support Concept Prioritization



# Initial Criteria Weightings



# Concept and Prioritization Worksheet

Indicate your preferences by marking in the boxes provided or placing a sticker.

Upper Petaluma River Watershed Flood Control Project – Scoping Study Concept Prioritization Worksheet

Contact Information: \_\_\_\_\_ Name \_\_\_\_\_ Phone Number \_\_\_\_\_ Email Address \_\_\_\_\_

Please indicate the relative importance of the following 14 project concept evaluation criteria by placing one check mark per line.

Concept Evaluation Criteria	High	Medium	Low
1. Reduce flood hazards	✓		
2. Increase groundwater recharge	✓		
3. Protect or improve surface water quality		✓	
4. Protect or improve groundwater quality		✓	
5. Protect or improve water supply reliability	✓		
6. Reduce channel erosion and sediment deposition			✓
7. Protect or improve aquatic and upland habitat conditions		✓	
8. Preserve or enhance stream buffers and riparian areas			✓
9. Preserve or enhance existing agricultural land uses	✓		
10. Preserve or enhance existing undeveloped lands		✓	
11. Preserve or enhance designated open space		✓	
12. Provide public access to project site			✓
13. Include educational features as part of project		✓	
14. Include recreational features as part of project		✓	

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Upper Petaluma River Watershed Flood Control Project – Scoping Study Concept and Prioritization Worksheet

Please mark on the map where you believe certain concepts could be implemented:

The map shows the Upper Petaluma River and its tributaries flowing through various towns and cities. A legend indicates the 'Project Area' (shaded gray), 'City Limit' (black line), and 'Waterway' (blue line). A red box surrounds the map area, indicating where users should mark potential implementation sites.

Project Area  
City Limit  
Waterway

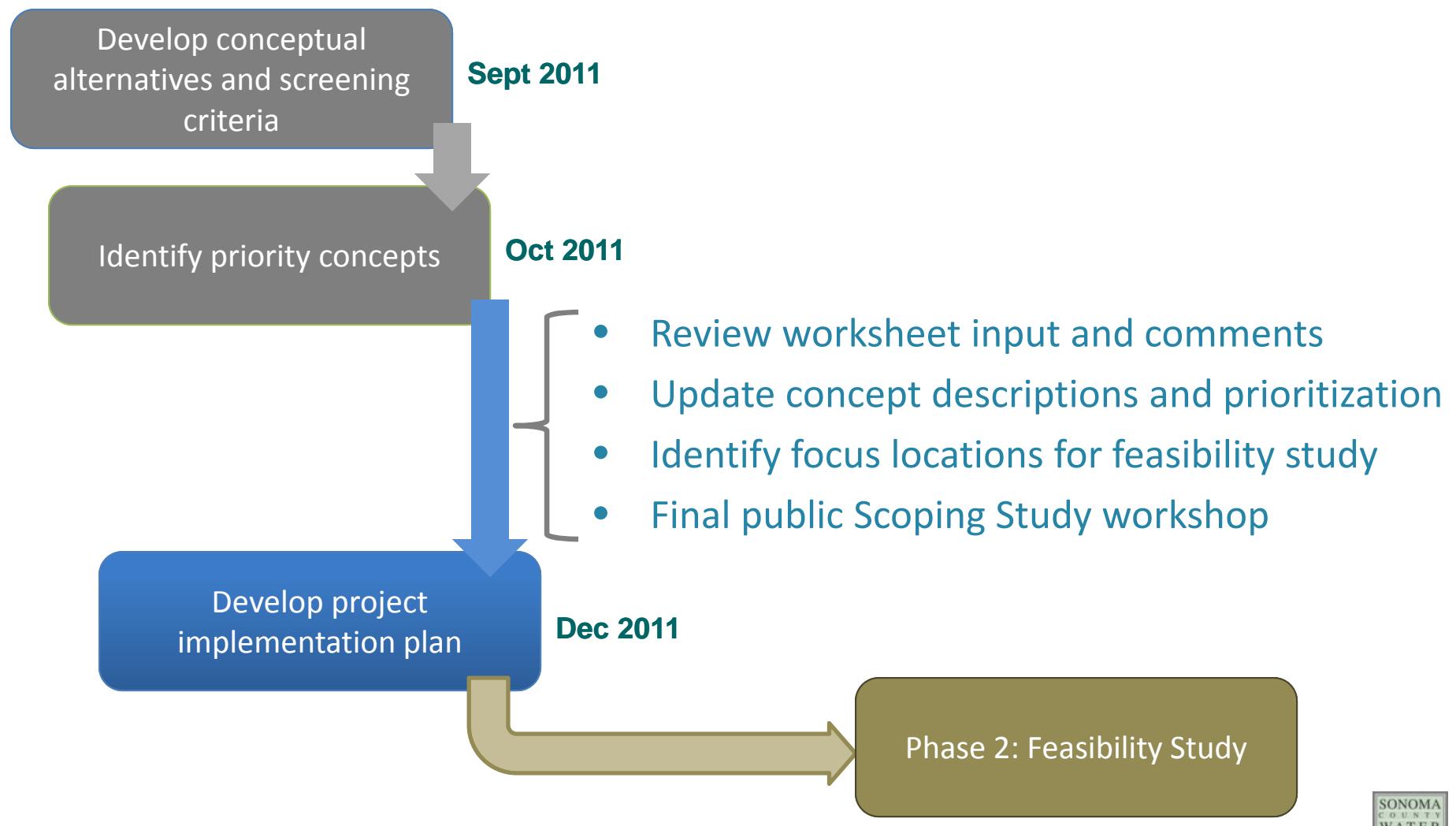
Please use this space to let us know of any additional concepts, considerations, or preferences that you have regarding this Scoping Study and Project:

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Indicate where you think certain concepts would be appropriate.

Share any other thoughts or preferences.

# Next Steps



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